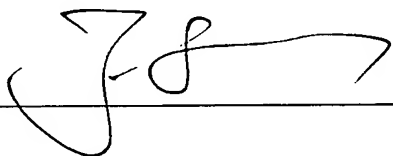


## C E R T I F I C A T E

I, Jürgen Strass, of Rundfunkplatz 2, D-80335 München, Germany, declare that I am conversant with the German and English languages, and that to the best of my knowledge and belief the accompanying text is a true translation of the priority document issued by the German Patent and Trademark Office on 19 November 2003, for Serial No. 203 01 521.5.

Signed this 24th day of August 2006



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Certified Translation

## **FEDERAL REPUBLIC OF GERMANY**

(coat of arms)

### **Certificate of Priority Relating to the Filing of a Utility Model Application**

**Serial Number:** 203 01 521.5

**Filing Date:** 31 January 2003

**Applicant/Owner:** TRW Automotive Safety Systems GmbH,  
Aschaffenburg/Germany

**Title:** Driver's Gas Bag Module

**IPC:** B 60 R 21/22

**The attached documents are a correct and true copy of the original documents of this utility model application.**

Munich, dated 19 November 2003  
**German Patent and Trademark Office**  
**The President**

[seal of the  
German Patent  
and Trademark  
Office]

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(signature)

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## Driver's Gas Bag Module

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The invention relates to a driver's gas bag module comprising a gas bag which, in relation to the inflated state, has a front wall facing the driver, and the central section of which, in the inflated state, has an indentation created in that  
5 the central section is prevented at least partially from a movement in a direction out from the gas bag module.

In such gas bag modules, which are known for example from EP-A-1 115 926, the gas bag is usually ring-shaped. The front wall here is the wall of the gas bag which in the inflated state is directed to the driver and onto which the driver  
10 can strike. The central section is usually the center of the front wall which at least at the start of the unfolding remains fastened to the gas bag module, so that in the inflated state the already mentioned ring shape of the gas bag is formed. Owing to this ring shape, the gas bag emerges obliquely outwards from the module housed in the steering wheel of the vehicle; only subsequently does the  
15 front wall move in the direction towards the driver.

Also for the case of a premature striking of the driver onto the gas bag which is still unfolding, or where the unfolding is affected by an obstacle, an optimum protective effect for the driver is aimed for. In conventional gas bag modules with a ring-shaped gas bag, an specific unfolding is assisted by a costly pre-folding of  
20 the gas bag.

The invention provides a driver's gas bag module which can be produced more simply and at a more favorable cost, in which also an improved protection for the driver is achieved under non-optimum unfolding conditions.

5 According to the invention, in a driver's gas bag module of the type initially mentioned, provision is made that the front wall, in relation to the center of the indentation, has an upper and a lower region, the outer edge of the upper region having three substantially straight sections. In contrast to the usual ring shape of the gas bag in generic driver's gas bag modules, the invention provides a "cornered" contour of the upper region of the front wall of the gas bag, which  
10 assists a supporting of the gas bag on the rim of the steering wheel of the vehicle during unfolding. Through the particular geometry of the upper region, therefore a possible dislocation of the gas bag to behind the steering wheel rim under unfavorable conditions during unfolding is avoided, without a prefolding of the gas bag being necessary. The elimination of prefolding generally leads to a greater  
15 process security on manufacture of the gas bag module. In addition, the cycle time can be shortened during the folding process of the gas bag.

Advantageous developments of the driver's gas bag module according to the invention are indicated in the sub-claims.

20 Further features and advantages of the invention will be apparent from the following description and from the enclosed drawings, to which reference is made. In the drawings:

- Figure 1a shows a side view of a driver's gas bag module according to the invention with inflated gas bag in accordance with a first embodiment;
- Figure 1b shows a top view onto the driver's gas bag module of Figure 1a;  
25 and
- Figure 2 shows a top view onto a driver's gas bag module according to the invention with inflated gas bag in accordance with a second embodiment.

The gas bag module 10 illustrated in Figure 1a is housed in the steering wheel of a vehicle. The gas bag module 10 has a gas generator 12 around which  
30 a holding part in the form of a diffusor 14 is arranged. The diffusor 14 is in turn arrested together with the gas generator 12 on the housing 16 of the gas bag

module 10. Between the diffuser 14 and the outer wall of the housing, an annular space is formed in which a gas bag 18 is housed, which is folded together without being prefolded. A covering flap 20 closes the gas bag module 10 in the non-unfolded state of the gas bag 18 and is swiveled outwards during the unfolding.

5       The gas bag 18 consists of a gas bag wall which has several sections, inter alia a section which is designated as front wall 22. The front wall 22 is the part of the gas bag 18 which faces the driver A. The front wall 22 has a centric section, hereinafter named the central section 24, which runs inwards in the direction towards the diffuser 14, i.e. is directed into the interior of the gas bag 18, so that  
10       an indentation 26 is produced.

      The top view of the gas bag module 10 illustrated in Figure 1b shows the shape of the gas bag 18 from the view of the driver A. The front wall 22 can be divided into a region above the center 28 of the indentation 26 (upper region 30) and a region below the center 28 (lower region 32), the lower region 32 being  
15       formed differently from the upper region 30. Whereas the lower region 32 has substantially the form of a ring section with a round outer edge 34, the outer edge 36 of the upper region 30 has three substantially straight sections 36a, 36b, 36c connected by two curved transition sections 36d, 36e. The radii R1, R2 of the curved transition sections 36d, 36e are substantially smaller than the radii R3, R4, which determine the curvature of the outer edge 34 of the lower region 32, and therefore substantially smaller than the distance of the curved transition sections 36d, 36e from the center 28 of the indentation 26. Thereby, the upper  
20       region 30 of the front wall 22 is given a comparatively "cornered" shape.

      In the embodiment of Figures 1a and 1b illustrated by way of example, the  
25       horizontal width w1 (transverse to the longitudinal direction of the vehicle) of the lower region 32 is equal to the width w2 of the upper region 30, and the vertical height h1 of the lower region 32 is smaller than the height h2 of the upper region 30. In alternative embodiments, however, the width w2 of the upper region can be greater than the width w1 of the lower region and/or the heights h1, h2 of the two  
30       regions 30, 32 can be equal.

      The embodiment shown in Figure 2 differs from the previously described embodiment in that also the lower region 32 has a "cornered" shape, so that as a whole a rectangular shape of the front wall 22 is produced. The outer edge 34 of

the lower region 32 can be divided, in an analogous manner to the outer edge 36 of the upper region 30, into three substantially straight sections 34a, 34b, 34c and two curved transition sections 34d, 34e with radii of curvature R3 and R4, respectively.

- 5        The two illustrated embodiments have in common the fact that in particular the “cornered” upper region 30 of the front wall 22 assists a supporting of the gas bag 18 on the steering wheel rim during unfolding and therefore prevents a dislocation thereof to behind the steering wheel rim.

### Claims

1. A driver's gas bag module comprising a gas bag (18) which, in relation to the inflated state, has a front wall (22) facing the driver (A), and the central section (24) of which, in the inflated state, has an indentation (26) created in that the central section (24) is prevented at least partially from a movement in a direction out from the gas bag module (10), characterized in that the front wall (22), in relation to the center (28) of the indentation (26), has an upper region (30) and a lower region (32), the outer edge (36) of the upper region (30) having three substantially straight sections (36a, 36b, 36c).  
5
2. The driver's gas bag module according to Claim 1, characterized in that the three straight sections (36a, 36b, 36c) of the outer edge (36) of the upper region (30) are connected with each other by curved transition sections (36d, 36e), the radii (R1, R2) of which are substantially smaller than their distance from the center (28) of the indentation (26).  
10
3. The driver's gas bag module according to Claim 1 or 2, characterized in that the horizontal width (w2) of the upper region (30) is greater than or equal to the horizontal width (w1) of the lower region (32).  
15
4. The driver's gas bag module according to any of the preceding claims, characterized in that the vertical height (h2) of the upper region (30) is greater than or equal to the vertical height (h1) of the lower region (32).  
20
5. The driver's gas bag module according to any of the preceding claims, characterized in that also the outer edge (34) of the lower region (32) has three substantially straight sections (34a, 34b, 34c).
6. The driver's gas bag module according to Claim 5, characterized in that the three straight sections (34a, 34b, 34c) of the lower region (32) are connected with each other by curved transition sections (34d, 34e), the radii (R3, R4) of which are substantially smaller than their distance from the center (28) of the indentation (26).  
25

Fig. 1a

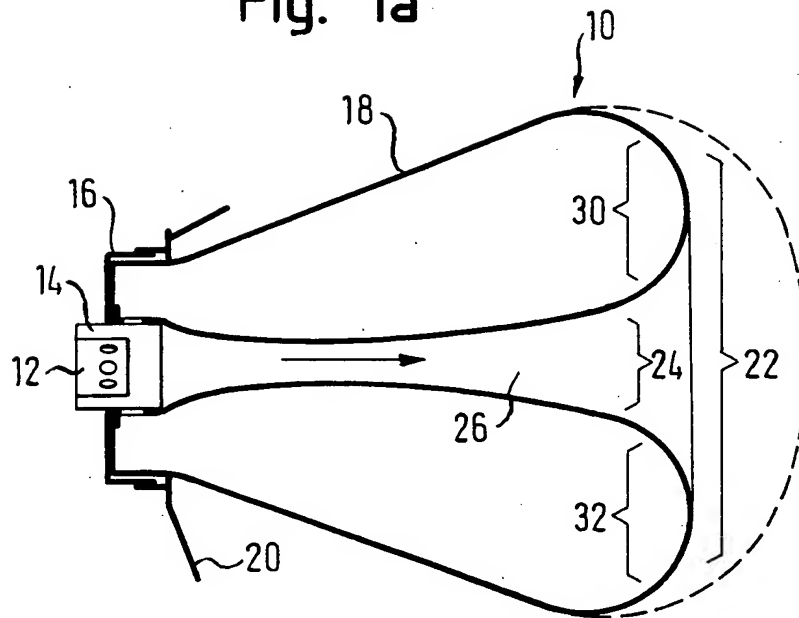


Fig. 1b

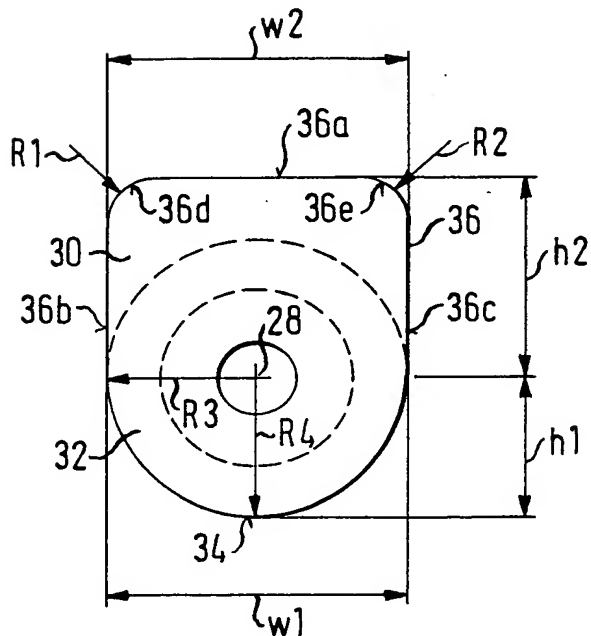


Fig. 2

